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Parameterization of microstructures in material science and material technology

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Abstract

The article deals with possible applications of multi-fractal parameterization of microstructures (MFP) fields of material science and welding. MFP is successfully used for fine selection of microstructures, specification of thermal treatment modes and others. Experimental data were recorded for samples manufactured from steels of austenitic class. The research also comprises data on dependence of grain size upon multi-fractal parameters of uniformity and orderliness got by other authors. The study suggests algorithm of predicting Vickers hardness on basis of multi-fractal parameterization of metallographic specimen by means of calculating the parameters of uniformity and orderliness. Program created on basis of algorithm allows analyze microstructure to determine the grain size.

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Keywords

Material science, Microstructures, Parameterization of microstructures, Steel, Welded joints, Welding